MINUTES

OF THE

IOWA STATE PRESERVES ADVISORY BOARD

MEETING

JANUARY 11, 2013

HELD AT:

IOWA DEPT OF NATURAL RESOURCES
WALLACE 4W,
DES MOINES, IOWA

For Office Use Only

Date Minutes Approved By SPAB: _____

Director's Signature: _____
Bruce Trautman
Deputy Director

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MEETING MINUTES

CALL TO ORDER

The meeting of the State Preserves Advisory Board (SPAB) was called to order by Wayne Phipps, SPAB Chairperson on January 11, 2013 10:03 a.m. He then welcomed guests and public present at the meeting.

BOARD MEMBERS PRESENT

Wayne Phipps, Chair
Thomas Putnam
Leesa McNeil - telephonic
Inger Lamb
Lynn Alex
Bruce Trautman

BOARD MEMBERS ABSENT

Kirk Larsen

DNR STAFF PRESENT

Daryl Howell	Aaron Brees
John Pearson	Travis Baker
Karen Fynaardt	John Wenck
Angie Bruce	Kevin Szcodronski

GUEST / PUBLIC PRESENT

- Nadine Pettingill, Lyon County Historical Sociey, Rock Rapids - telephonic
- Steve Simons, Lyon County Historical Society, Rock Rapids - telephonic
- Byron Shreick, Lyon County Historical Society, Rock Rapids - telephonic
- Jim Henning, Woodbury CCB, Sioux City - telephonic
- Ed Gruenwald, Hartman Reserve
- Kathy Gourley, State Historical Society

1. APPROVAL OF AGENDA

Motion – Lamb motioned to approved the agenda.
Seconded – Alex
Decision – Approved by Unanimous Vote

APPROVED AS PRESENTED

2. APPROVAL OF MINUTES FROM OCTOBER 18, 2012

Motion – Putnam motioned to accept as amended with corrections.
Seconded – Alex
Decision – Approved as amended by unanimous vote

APPROVED AS AMENDED

3. GITCHIE MANITOU STATE PRESERVE

The Board toured the preserve with the Lyon County Historical Society in October and discussed various options for the degraded shelter. Items in need of clarification included cost estimates for shelter restoration, acreage discrepancies, closing hours, the 1969 dedication statement, and the 1989 management plan. A decision is needed regarding restoration or removal of the degraded shelter.

Motion – Lamb motion to table to next meeting Getting a report back from the Sheriff and that Parks will have 60 days to do archeological review and structural engineers do a cost assessment for an estimate of shelter reconstruction.
Seconded – Alex
Decision – All aye

TABLED

Lamb left meeting at 11:23 am

APPROVED AS PRESENTED

4. SPIRIT KNOLL PROPERTY

A scenic, 168-acre area of Loess Hills land north of Sioux City with significant archaeological resources and native prairie remnants has been proposed as a new state preserve. Informally known as "Spirit Knoll", it was acquired by the Iowa Natural Heritage Foundation and recently transferred to the Iowa Department of Natural Resources. A management plan has been written DNR staff with assistance from the Office of the State Archaeologist and discussed during the business meeting. "Spirit Knoll" will be renamed before the official preserve dedication.

Motion – McNeal to approve the draft management plan with the addional comments by Lynn Alex and exact name to be decided at a future date.
S**econded** – Putnam
Discussion: None
Decision – All Aye

5. CEDAR HILLS SAND PRAIRIE

An existing transmission line bordering the preserve on its south border will be upgraded by Mid-American Energy. Negotiations between Mid-American Energy and the Iowa Chapter of The Nature Conservancy have resulted in exemptions from restrictions normally imposed upon right-of-way easements that will allow continued managemenet of the preserve.

December 19, 2012

John Pearson
State Preserves Board
Wallace State Office Building
Des Moines, Iowa 50309

John,

On December 14, we (myself and our legal counsel) had a phone call with Ed Trapp, project director representing Mid American Energy, about the negotiation and upgrade of the transmission line along the south boundary of Cedar Hills Sand Prairie. The current proposal would include the removal of four wooden poles and replace them with two steel poles. Both new steel towers will be placed 5 feet south of the preserve boundary line on private property. They see no reason why they would enter Cedar Hills Sand Prairie at this point in time. As per our conversation, they will allow us to continue with our fire, invasive species, and brush management programs under the transmission lines. The changes they are proposing in the new easement will be the increase of the horizontal blowout, the area impacted with blowing transmission lines in wind events, etc., will increase from the current 50 foot to 70 foot into the south end of the preserve boundary. Mid American is aware that Cedar Hills Sand Prairie is a designated State Preserve, has significant biological value, and is redrafting the easement to incorporate our land management objectives into the easement. New easement language will allow The Nature Conservancy to cultivate, use and occupy the property, maintain the native prairie and wetland communities, control trees, brush, and invasive species through mechanical removal, spraying and prescribed burning, and maintain, repair and replace fences. This would also include grazing the property in the future if we deem that an important ecological tool. If the new easement accurately reflects our conversation, I do not think it will create an impact to our current and future management plans for Cedar Hills Sand Prairie. When the new easement is drafted, I will forward for your review. Thank you and please contact me if you have any questions, concerns, or need clarification on our conversation.

Scott Moats

Director of Stewardship
The Nature Conservancy

INFORMATIONAL ONLY

6. HARTMAN RESERVE

Hartman Reserve Nature Center has beenresearching the feasibility of releasing Blue-spotted Salamanders (BSS) into the Hartman Bluff State Preserve. After consultation with Iowa DNR and the Henry Doory Zoo, it was determined that the chance of success is great enough to proceed. BSS larvae have already been collected from George Wyth State Park and are currently being rased in a lab at the Henry Doorly Zoo. Assuming that laboratory breeding is successful, we request permission to release in the state preserve in spring 2013 and 2014. Monitoring will continue until a stable population is determined to exist

Monitoring Plan for the Blue Spotted Salamander Release
at Hartman Reserve Nature Center
Background:
The blue-spotted salamander is currently listed on the "Iowa Threatened and Endangered Species" list as an endangered amphibian. Currently it is only found in two Iowa counties, Black Hawk (where we are located) and Linn. A population has been identified at George Wyth State Park, adjacent to Hartman Reserve Nature Center (HRNC).
When talking about this species in relationship to HRNC, Anderson et. al. (1975) stated "the lowland portion would seem to provide a suitable habitat for it and an effort should be made to preserve the habitat." For several years the salamander population at George Wyth has been threatened by low water levels causing limited genetic diversity due to lack of reproduction. The "Wyth" population is unable to spread due to impassible borders such as highways and a large river. Relocating blue-spotted salamanders to Hartman Bluff State Preserve will increase the population and genetic diversity, as well as spread their range, decreasing the impact of industrial or environmental threats.
Over the last three years volunteers have been monitoring for blue-spotted salamander populations at HRNC. The surveys over the last two years have included GPS positioning to determine site viability. These surveys have been conducted during the first two weeks in early April when breeding is most likely to occur. We have used minnow traps and looked under logs in area of traps to determine existing blue-spotted salamander populations. Volunteers participate in a two hour seminar then each day record weather conditions, site conditions and what was found as well as other general comments
In order for this program to work, blue-spotted salamanders will need to be bred to be released at HRNC. The Henry Doorly Zoo in Omaha has offered to help with a breeding program. Omaha's Henry Doorly Zoo has worked with over 100 amphibian species during the last two decades with an emphasis on two major conservation projects. Since 1993 the zoo has been active in the Wyoming Toad recovery project and species survival plan (SSP). Over 2,000 tadpoles and toadlets that were produced at the zoo have been put back in to protected areas in Wyoming since the beginning of the project. The other major amphibian recovery project has been with the Puerto Rican Crested toad SSP, where over 1,200 tadpoles have been produced and sent to Puerto Rico since 1998. In January of 2006 the zoo began construction on its Amphibian Conservation Area; a 4,200 square foot space dedicated to the maintenance and propagation of endangered amphibian species. The Henry Doorly Zoo is willing to maintain a breeding colony of blue-spotted

salamanders collected from Iowa for the purpose of providing eggs, larvae, metamorphs, and/or adults that could be released at the HRNC.
Throughout this document the reader may notice the phrase 'the larger committee' in reference to decisions that still need to be made. This committee consists of representatives of the HRNC, the Henry Doorly Zoo, the USDA Natural Resource Conservation Service, The Nature Conservancy, the Iowa Department of Natural
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Resources, George Wyth State Park, Dr. James Demastes from the University of Northern Iowa, and Dr. Hadow from Coe College in Cedar Rapids.
Past Monitoring at HRNC
The Nature Center has had continued success with volunteer involvement and training in the monitoring of salamanders. Every year since 2007 volunteers have surveyed pools in the proposed release site and other sites for three weeks in early April to determine whether the Blue Spotted Salamander already occurs and to look for other potential threats such as minnows or other fish. In the past, Minnow traps had been set and monitored daily during the first weeks of April. Volunteers recorded any findings in and around the traps. The vast majority of these volunteers have been students in the University Of Northern Iowa Biology Department. We are confident that this pool of volunteers is available well into the near future. In case of emergency, HRNC staff is available to provide all necessary monitoring.
During the last weeks of March and into the first weeks of April is when the salamanders enter the pools. Before this occurs volunteers have been required to attend a monitoring workshop where monitoring procedures are explained and volunteers are required to demonstrate the procedure. The volunteers were taken to the monitoring sites and shown where and how to administer the monitoring. Volunteers were required to record data such as a list of all species found in traps as well as weather conditions. If species cannot be recognized, we asked volunteers to photograph and describe distinguishing characteristics. This data is turned in to the administrative office at HRNC. Traps are checked everyday and volunteers are required to contact HRNC staff if they are unable to show up for their shift. HRNC has paid staff available to monitor volunteer procedures and to cover missed shifts. The data will be made available to Iowa DNR and any educational or research institution.
Habitat management plans
The Management plan for the area surrounding the proposed release site states that, "The five release pool sites should continue to be protected and monitored by trained staff and volunteers prior to and following the release." This [plan was reviewed and approved by the Black Hawk County Conservation Board on May 7, 2010.
The blue spotted salamander prefers pools located in wooded areas. Since this habitat already occurs in the proposed release site, HRNC would continue to manage the area to maintain the current conditions. The management plan would take into consideration input from experts on the committee regarding habitat management.
Plans for Post Release Monitoring:
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Volunteers and staff will monitor, at minimum, 3 separate pools all in close proximity. Each pool will have a minimum of 2 traps and one board. As done in previous years, the traps and boards will be monitored daily during Spring breeding.

In the same year as release, minnow traps will be set in pools after release to monitor for fish. The traps will be monitored daily. One trap per pool will be set. Traps will be monitored until it has been determined that the salamanders have left the pool.
Volunteers will be required to attend a monitoring workshop where monitoring procedures are explained and volunteers are required to demonstrate the procedure. The volunteers are taken to the monitoring sites and shown where and how to administer the monitoring. Volunteers are required to record data such as a list of all species found in traps as well as weather conditions. If species cannot be recognized, we asked volunteers to photograph and describe distinguishing characteristics. This data is turned in to the administrative office at HRNC.
Traps are checked everyday and volunteers are required to contact HRNC staff if they are unable to show up for their shift. HRNC has paid staff available to monitor volunteer procedures and to cover missed shifts. Ed Gruenwald, Nature Center Director and Katie Klus, Volunteer Coordinator will be lead staff on this project. The data will be made available to Iowa DNR and any educational or research institution.

Figure 1: Trap locations

The monitoring will continue until the committee determines that a self sustaining population exists. The monitoring plan will then be reevaluated.
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Should fish be documented in release pool, a call to Dan Kirby at the Iowa DNR's Manchester Fisheries Management Office (563-927-3276) with a description of problem and a photo or description of fish is required. The course of action will be recommended to the BSS advisory group. Action will be coordinated by HRNC Staff.
Monitoring plans may change depending on the level of funding attained:
Minimum Plans Should No Additional Funding Be Available: Would have to rely on volunteers from HRNC Reserve and UNI, would also have to rely on Visual Encounter Surveys and the use of any traps currently in ownership of HRNC Reserve. Marking methods for wild-bred blue-spotted salamanders would be limited to a toe-clipping scheme (which, if UNI or another University is assisting, this will need to be approved through the University Animal Research Committee or Institutional Animal Care & Use Committee). Volunteers would be responsible for monitoring traps and coverboards everyday for 4. Volunteers are required to attend an orientation and to record all findings. Visual encounter survey is conducted daily.
Plans Should Funding of $5,000 or Less per Year be Attained: In addition to the above methods, could include the use of coverboards and VIE or other marking method. Need to include info on responsibilities of parties involved (number of days and weeks of effort, number of hours per day, etc).
Plans Should Funding of $5,500 to $50,000 per Year Be Attained: Would this be enough to start thinking about capturing adults at HRNC and implanting transmitters? Enough to hire technicians to ensure work is carried out?
Education and Outreach efforts
HRNC employs one full time naturalist, two part-time and numerous interns directly involved with environmental education. Programs such as this are regularly incorporated into outreach and inservice programs at HRNC. HRNC receives over 40,000 visitors each year. The education efforts for the blue spotted salamander include schools trip to HRNC, in-service learning projects, class visits from a naturalist. HRNC is already obligated to provide education about the blue spotted salamander and other rare or endangered species

which occur in the reserve through a 2007 Institute of Museum and Library Service grant. HRNC intends to educate the community about this projects importance. The native species that prosper on our property serve as our collection. Without education a person will not understand the importance of preserving our native species, especially with the introduction of invasive or ornamental plants.
HRNC has provided 1000 hours worth of volunteer experience for youth and adults. Annually hundreds of volunteers or service learning groups assist HRNC with ongoing
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projects. All the monitoring and habitat treatment needed in this project will provide at least 1000 hours of volunteer need.
The forest, prairies and wetlands of HRNC are its collection. The ecological management and restoration of these natural areas is how the nature center cares for its collections. This project is the next logical step in restoring native habitat. Our successful experience in past programs has helped create a habitat suitable to these native species.
Example of Materials Used by Monitoring Volunteers
Example 1:
Salamander Trap Survey
Date:
Trap Contents
West of Hartman Station
1. N42º 31.4552
W092º 24.6838
2. Turtle Pond SE Corner
N42º 31.4405
W092º 24.7119
East of Hartman Station
3. 600ft east of Hartman Station
N42º 31.4079
W092º 24.5210
4. Near #3 (a little SE of #3)
N42º 31.4079
W092º 24.5210
5. 25 ft west of State Preserve Sign
N42º 31.4030
W092º 24.5218
6
Notes, Weather, and Conditions:

Motion – McNeal to take larvae of the Blue-spotted Salamanders from laboratory and place in the State Hartman reserve.
S**econded** – Trautman
Decision – All Aye

APPROVED AS MOTIONED

7. CONDUCT SMALL MAMMAL SURVEY AT PILOT KNOB

Hesterlee, a student of Dr. Paul Bartelt at Waldorf College is requesting permission to conduct a live-trapping survey for the southern re-backed vole at Pilot Knob State Park and Preseve.

Trapping for the Presence of Southern Red-backed Voles (*Clethrionomys gapperi)* in Winnebago County, Iowa

By: Quinn Hesterlee

12/7/2012

Goal and objective:

The objective of this research is to test the hypothesis that a population of Southern Red-Backed Vole (*Clethrionomys gapperi)*, still resides in Winnebago County Iowa, because this is part of its historic southern range and the area still retains suitable habitat. A previous study in the spring of 2000 suggests that red backed voles are locally extinct (Orrock and Danielson 2005).

Background information:

With today's focus on maintaining and expanding biodiversity, routine monitoring of endangered species is important for formulating a management plan to sustain biodiversity. Extinctions of small mammals on a local scale are becoming more numerous all across the United States, though for different reasons. In northern California Blois et al. (2010) studied the effect of climate change on small mammals. They found that in the last 20,000 years the small mammal community changed in the abundance at the level within the community rather than at the taxonomic level. In Maine, an explanation for the decline of population at a local level could be the cyclic events experienced by Red-backed voles. Elias et al. (2006) suggests that there is a

direct positive correlation between the white pine (*Pinus strobus*) seed fall and the southern red-backed vole (*Clethrionomys gapperi).*

The red-backed vole, *Clethrionomys gapperi*, is an arvicoline rodent generally associated with wooded areas containing old fallen trees and low to sparse herbaceous cover, with food consisting primarily of roots, nuts, berries, fungi, and some insects and with water readily available (Dubay et al. 2008). Classified as an endangered species, the red backed vole is dwindling in Iowa. The habitat necessary for the red-backed vole has been reduced by half since Iowa has become a state in 1846 (Iowa DNR 2012). Because suitable habitat still remains in this historic part of its range, but no *C. gapperi* were found twelve years ago (Orrock and Danielson 2005) need to again test for its presence. Its absence could suggest that small mammal declines include *C. gapperi* in northern Iowa, too.

Method:

I will sample two separate areas with three trapping sights per area, the first area is Benson's wood lot located two and a half miles north of Pilot Knob State Park in Winnebago County, IA. I will set-up three separate trapping grids on this 15 ha privately owned wood lot dominated by white oak (*Quercus alba*), and red oak (*Q. rubra*) other sporadically present species in the wood lot; pin oak (*Q. palustris*), bur oak (*Q. macrocarpa),* and shag bark hickory *(Carya ovata)* (Fig 1). Trapping grid A is located in a low saddle with thicker ground cover comprising of mostly buckthorn (*Rhamnus*). Trapping grid B is located on the edge of a wet grassy area in the woods near numerous old fallen trees. Trapping grid C is located on the hill side with numerous fallen trees in the area.

Figure 1. Benson's wood lot

Pilot Knob State Park is a 283-ha area located in Hancock and Winnebago counties in the northern portion of central Iowa (Orrock and Danielson 2000). Pending approval by the Iowa Preserves Board, I will trap three additional grids in the Park, all previously surveyed by Orrock and Danielson (2000): the amphitheater, the knoll and the surrounding area near Dead Man's lake (Fig. 2). The amphitheater site is in the eastern part of the Park and the grid will extend north from the bottom of the draw up near the top of the ridge. The knoll site will be to the north of Pilot Knob Tower down the hill approximately 100 meters, due to the clearing of trees. The Dead Man's lake site will be north east of the lake up on the ridge see. All three sites still support good habitat for red-backed voles.

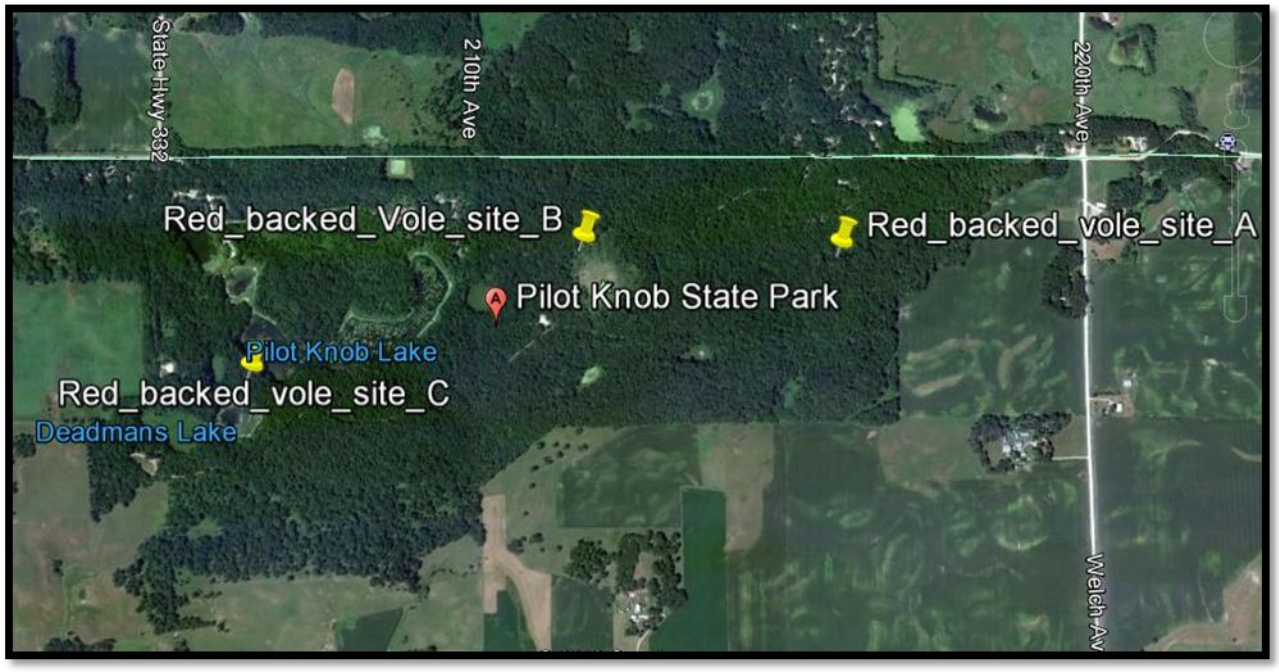

Figure 2. Pilot Knob trapping site map.

Each trapping arrangement will be a 4x5 grid. A plastic cover (5-gal bucket cut in half lengthwise) placed over the top of the traps will help with insulation and facilitates the checking

of traps when it snows see (Fig. 3). Sherman box traps (10”x3”x3”) will be baited with peanut butter and crushed nuts. A 50%-50% cotton polyester blend fabric cut into 2”x3” squares will be added to the traps to facilitate thermal insulation along with a covering of duct tape on the inside of the metal traps. I will monitor temperatures inside three traps with three temperature data loggers (Onsett Computer Corp., Pocasett, MA), programmed to collect a datum every 10 minutes. We will mark all small mammals captured with ear tags (National Band and Tag Co. Lexington, KY). I will collect biometric data on each animal caught. This trapping will be conducted under the auspices provided by the Iowa DNR scientific collection permit to Dr. Paul E. Bartelt. The trapping schedule will consist of three trapping events of five day periods separated by five day intervals of the traps being closed, tentatively starting on the 7th of December and concluding on the 31st of December see (Fig. 4).

Expected results:

I hope to find a population of Red backed vole *Clethrionomys gapperi* in each of these sites and to monitor their movements through the month of December. On completing compiling the data I plan to present my results of this work (e.g., Iowa Academy of Science).

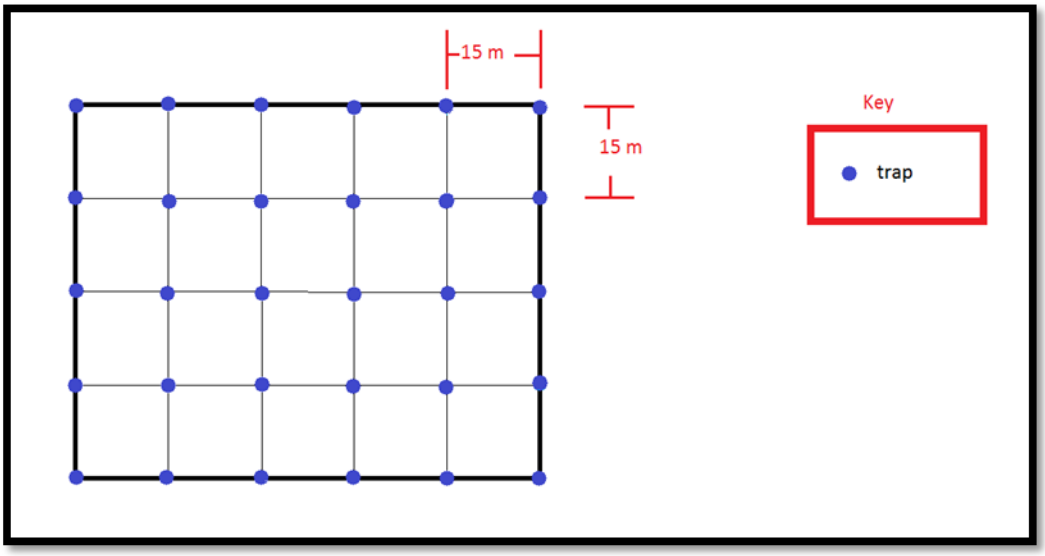

Figure 3. The trapping pattern we will use at all sites.

December

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	*7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	*31					

* Start and end of experiment
open day
closed day

Figure 4. Trapping schedule

Literature Cited

Blois, J. L. Blois, J. L. McGuire, and E. A. Hadly. 2010. "Small mammal diversity los in response to late- Pleistocene climatic change." Vol. 465, June 2010. Pg. 771-775.

Dubay, S.A. , G.D. Hayward, and C. Martinez Del Rio. 2008. "Nutritional value and diet preference of arboreal lichens and hypogenous fungi for small mammals in the Rocky Mountains." Can. J. Zool. 86: 851-862.

Gunderson, B. L. 1959. "Red-backed Vole habitat studies." J. Mammalogy 40(3): 405-412.

Iowa DNR. 2012." Iowa's Threatened and Endangered Species Program". N Pg. Web 1. Nov. 2012. http://www.iowadnr.gov/Environment/ThreatenedEndangered.aspx

Orrock, J. L. and B. J. Danielson. 2005. "A Note on the Status of the Endangered Red-backed Vole (*Clethrionomys gapperi*) in Iowa." Jour. Iowa Cad. Sci. 112(1.2): 24-25.

Susan P. Elias, Jack W. Witham, and Malcolm L. Hunter, Jr. 2006 "Acyclic Red-Backed Vole (*Clethrionomys gapperi)* population and Seedfall over 22 Years in Maine." J Mammalogy 87(3): 440-445.

Motion – Putnam motioned to allow Quinn Hesterlee, Waldorf College students to conduct live-trapping survey of the Southern Red Backed Vole at the Pilot Knob State Park and Preserve.
S**econded** –
Discussion – Ear tagging will take place to
Decision – All aye

APPROVED AS MOTIONED

8. ORCHID RESEARCH AT DINESEN PRAIRIE STATE PRESERVE

Two related studies of the Western Prairie Fringed Orchid (Platanthera praeclara, federally Threatened plant) are proposed for Dinesen Prairie State Preserve by Dr. Jyostsna Sharma (Texas Tech University) and by Dr.Lori Biederman (Iowa State University).

Project Name

Temporal and spatial relationships between geography, management, environmental variables, and obligate mycorrhizal dependency in Western Prairie Fringed Orchid (*Platanthera praeclara* Sheviak & Bowles)

Applicant

Dr. Jyotsna Sharma
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Texas Tech University
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Project Summary

Platanthera praeclara (Western Prairie Fringed Orchid) is a threatened, flagship, mycotrophic, tallgrass prairie species whose largest populations are concentrated in the Red River drainage in Manitoba, Minnesota, and North Dakota. Smaller populations extend into northern Missouri, with several medium sized populations occurring in between. Its status is one of 10 measures of prairie ecosystem health identified in the Minnesota Prairie Conservation Plan 2010, but interpretation of ongoing monitoring and research at the scale of management units is clouded by high temporal and spatial variability of flowering plants likely associated with climate-related environmental microhabitat conditions whose impact on orchid populations is mediated by their more sensitive mycobionts. This project will inform adaptive management by investigating mycorrhizae and other soil microbial flora in response to fire, haying, grazing, and no active management treatments across MN, ND, NE, IA, and in Manitoba (Canada). Combining the mycorrhizal data with other microhabitat data (i.e., soil chemical characteristics, soil moisture, soil temperature, and soil compaction) will provide multiple layers of management-relevant information from the same study sites.

Project Narrative

Platanthera praeclara (western prairie fringed orchid) is a federally threatened prairie species currently known to occur in 6 U.S. states (MN, IA, MO, KS, NE, and ND) and one Canadian province (USFWS 1996). A majority, and the largest, of its populations also fall in the area

under the Plains and Prairie Potholes Landscape Conservation Cooperative. The species was first documented by the Lewis and Clark expedition (under the name *Habenaria leucophaea*), but the center of its apparent historic range was from the Red River valley of Manitoba, Minnesota, and North Dakota, extending southeastward to Iowa and Missouri and westward to northeastern Oklahoma, eastern Kansas, central Nebraska and eastern South Dakota. The species has subsequently disappeared from Oklahoma and has been declining in the southern part of its range. Minnesota and North Dakota together support over 80% of the plants in the U.S., but the only place where populations appear to be consistently on the rise is in Manitoba, where its counts often are higher than those of the neighboring two U.S. states combined. The orchid is also protected by the Canadian Species at Risk Act.

The perennial plants occur most often in remnant, unplowed, calcareous native prairies and meadows, but have also sometimes been observed at disturbed sites. In the southern part of its range it is more likely to be found in mesic upland prairies and in the north more frequently in wet prairies and sedge meadows. It is also known from prairies and swales in sand dune complexes that are fed by shallow underground water. Precipitation and soil moisture are documented to be critical determinants of growth, flowering, and distribution of the species (USFWS 2009). Management practices for the species' habitat include periodic disturbance by fire, haying, or grazing, but these practices may also cause adverse effects and must be carefully implemented. Long-term experiments are in place both at Pembina Trail Preserve (Polk County, MN) and at Sheyenne National Grasslands (Ransom County, ND) to compare the efficacy of fire season, haying, and grazing. At these sites as well as at other populations that are monitored yearly, counts of flowering stems are the primary population performance data that are collected.

Like other terrestrial orchids (and all orchids, in general), this species is also mycotrophic throughout its life. Additionally, all orchid seeds are mycoheterotrophic (i.e., fully dependent on fungi) for germination and early protocorm development before plants gain photosynthetic capability (Zettler et al. 2003). However, very little information exists on the identity, distribution, and abundance of fungi necessary for the species' persistence (Sharma 2002, 2005; Sharma et al. 2003a, 2003b). More importantly, it is not known how the orchid symbionts are responding to the changing climatic conditions. It is also not known whether the soil moisture effects that have been documented as critical for its growth and flowering are mediated through the mycorrhizal fungi, or if they are at work directly through other microhabitat conditions such as direct availability of water to the plant roots, soil temperature, and soil compaction. Whether the microhabitat conditions are similar under different management regimes practiced throughout the various landscape forms where the orchid currently occurs is also not known.

Thus far, data collected to determine the influences of climatic and environmental conditions exclusively include counts of flowering plants for the monitored populations. While of great significance as indicators of gross population performance under variable yearly precipitation conditions, such data do not capture the environmental, biological, and edaphic conditions in the

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root zones of the plants. Additionally, *Platanthera praeclara* populations exhibit so much temporal variability above-ground that it is difficult to relate site-wide count data to ambient local climate and management. For example, annual counts of flowering plants on the grazed Sheyenne National Grassland, ND and a long-term experimental study of spring and fall fire, and haying at Pembina Trail Preserve, MN address above-ground responses to management but do not capture microhabitat conditions that have a cumulative impact on sensitive soil microorganisms. Changes in the soil microflora can have significant and long-term implications

for the species composition and the function of the prairie landscape. Microbial flora of native communities, especially the obligate fungal hosts of plants, is implicated in influencing vegetative community composition via positive or negative feedback mechanisms. These effects are often compounded when the plant-fungus relationships are highly exclusive, as can be the case for many orchid species and their mycorrhizal fungi. An assessment of the microhabitat conditions is thus urgently warranted for informing the current management of the species' habitat.

Cutting edge high throughput DNA sequencing techniques are now enabling effective, high resolution assessments of soil microbial communities. We will utilize 454 sequencing techniques along with the traditional Sanger sequencing techniques for revealing the identity, distribution, and abundance of the obligate mycorrhizal associates of *Platanthera praeclara* at sites representing various land management practices and landscape formations to inform management decisions for the recovery of the species. Comparing the fungi present in orchid roots against those present in the soil collected from where orchids are present and where they are absent will allow an evaluation of the environmental effects on the microhabitat of this threatened species. Furthermore, an assessment of the root zone micro-environment will lead to estimates of the species' response to variable climatic conditions.

Project Location

We will conduct our studies at the sites listed below. The species' natural range also overlaps with a large part of the geographic region under Plains and Prairie Potholes Landscape Conservation Cooperative (Figure 1). Populations of *Platanthera praeclara* at the locations listed below have been monitored (at least for counts of flowering plants) relatively consistently over the past many years and will provide an opportunity to place our data in the context of long-term population performance data.

1. Pembina Trail Preserve (Polk County, MN) and Blue Mounds State Park (Rock County, MN) – 4 treatment sites at Pembina and 1 treatment site at Blue Mounds

Pembina Trail Preserve is a 1,651 acre area that is a part of what The Nature Conservancy considers a large, functioning ecological system, or landscape-scale site. The preserve's proximity to other natural areas enriches its ecology and enhances its suitability for animals that require large blocks of quality habitat. Blue Mounds State Park is a 1,830 acre park located in southwest MN. The area is geologically unique relative to other study sites in that it is situated on Sioux quartzite rock formation.

2. Sheyenne National Grasslands (Ransom County, ND) – 3 treatment sites

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The Sheyenne National Grasslands comprise approximately 70,180 acres in public ownership that is associated with the 64,769 acres in private ownership located in both Ransom and Richland Counties of North Dakota.

3. Valentine National Wildlife Refuge (Cherry County, NE) – 1 treatment site

Valentine National Wildlife Refuge is 71,772 acres in size and it lies in the heart of a vast area of undulating sand dunes that stretch across north-central Nebraska. The region, called the Nebraska Sandhills, is the largest remaining tract of mid- and tall grass prairie in North America.

4. Dinesen Prairie State Preserve (Shelby County, IA) – 1 treatment site

Dinesen Prairie State Preserve (°41.704767 °-95.254683) consists of 20 acres of native prairie and loess-topped ridges. It is located in the Southern Iowa Drift Plain.

5. Tall Grass Prairie Preserve (Manitoba, Canada) – 1 treatment site

Southern Manitoba hosts some of the largest populations of the orchid, which can be found in calcareous prairies and wet meadows. *Platanthera praeclara* is a provincially and nationally endangered species in Canada.

Project Objectives

1. Determine the spatial variability of microhabitat conditions including mycobionts of *Platanthera praeclara* to assist in adaptive management of its habitat for its recovery.
2. Determine the temporal variability of microhabitat conditions including mycobionts of *Platanthera praeclara* to assist in adaptive management of its habitat for its recovery.
3. Link and integrate the plant, soil, and environmental data to estimate the response of the species to changing climatic conditions to inform its management and recovery.

Methodology

Objective 1. Root samples will be collected from up to 6 plants (2 seedlings, 2 juveniles, and 2 adult plants) at each sampling site. Roots will be stored at 4C until they arrive at the laboratory for further processing. Soil temperature, moisture, and compaction data will be collected at the time of sampling roots. These locations will be marked with plastic stakes for future reference. Soil samples for fungal analyses will be collected close to the sampled plants and at locations where orchids do not occur naturally (i.e., one non-orchid control point for each of the metapopulations
listed above in the project location section). Larger volume soil samples will also be collected at the same location for determining the chemical and physical properties of the soil. Data loggers will be launched at each of the soil sampling locations; an additional location will be used at each site as a non-orchid associated control.

Upon arrival at the laboratory, roots will be washed free of soil and surface sterilized before they are inspected for the presence of pelotons within them. Approximately 2.5 to 3 cm long segments of roots containing pelotons will be subjected to processing for molecular analyses. Up to 10 segments will be used to represent a single collected plant (6 plants per site; 10 segments per plant). Root segments will be frozen at -80 until total DNA is extracted. Mycorrhizal fungal identity and abundance from within the orchid roots and the identity of the orchid taxa will be
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determined by using nuclear ribosomal ITS region (Sharma et al. 2007, Taylor and McCormick 2008). Electrophoresis will be conducted subsequently to check for PCR products. Once the PCR products are cleaned, they will be sequenced by using the same primers to obtain forward and reverse sequences for the fungal ITS region. Sequences will be cleaned and aligned before they are submitted to GenBank or other fungal databases for identity searches. Phylogenetic analyses will be performed subsequently to place the fungal associates of *P. praeclara* in the context of known orchid fungi. Principal Component Analyses will assist in identifying the spatial structure of fungal distribution across the study sites and across land management practices in various landscapes represented by the study sites. Fungal diversity estimates will be compared to data from other terrestrial orchids, rare and common, worldwide.

A few root segments from up to 3 sampled plants from each of the meta-populations will also be used to obtain pure cultures of fungi inhabiting the roots of the species (Sharma et al. 2003a). Sampling of roots will be carried out as carefully as possible. Small seedlings will have to be extracted whole because of the very small size of their root systems. Adult plants will remain onsite
after root sampling is complete. We will mark the sampled plants to assess their survivability post-sampling. It is expected that larger specimens will be able to survive this disturbance.

Soil samples will be frozen immediately upon arrival at the laboratory and kept at -80 until total DNA is extracted. Substrate samples will be subjected to next generation sequencing on the 454 Titanium FLX platform (Margulies 2005, Jumponnen 2009). Fungal diversity estimates and phylogenetic analyses (www.borealfungi.uaf.edu; Taylor et al. 2008, Geml et al. 2010, Taylor and Houston 2011) will be conducted to obtain the most comprehensive fungal distribution data to date from midwestern prairies that serve as the specialized habitat for *P. praeclara*. Analyses of specificity of orchid-fungus interactions (Dufrene and Legendre 1997, Nei and Li 1979) and spatial autocorrelation will answer questions on specificity of microbial association and spatial structure of fungi in this system. Cluster analyses will be used to construct environmental niche categories and fungal association classes for the orchid (Ter Braak and Van Tongeren 1995). Randomization tests will then be used to test whether orchids partition niche space through fungal associations.

Objective 2. Roots and soil will be sampled again in Year 2. Adjustments to the methodology might be made based on our experience during the first year, but we do not anticipate any significant modifications.

Objective 3. Non-metric multidimensional scaling (NMS) will be used to ordinate fungal communities in orchid roots and in soil using the program PC-ORD and to test for relationships between the environmental and soil chemical data and fungal presence and abundance. Pearson's correlation coefficient between environmental and soil chemical variables and fungal abundance will also be estimated. Further, ANOVAs will be performed to detect the variation in soil and environmental characteristics across experimental sites.

Length of proposed project (21 September 2012 – 20 September 2015)

Literature Cited

Dufrene, M. and P. Legendre. 1997. Species assemblages and indicator species: The need for a flexible asymmetrical approach. Ecological Monographs 67:345-366.

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Geml, J., G. A. Laursen, I. C. Herriott, J. M. McFarland, M. G. Booth, N. Lennon, H. Chad Nusbaum, and D. Lee Taylor. 2010. Phylogenetic and ecological analyses of soil and sporocarp DNA sequences reveal high diversity and strong habitat partitioning in the boreal ectomycorrhizal genus Russula (Russulales; Basidiomycota). New Phytologist 187:494-507. doi: 10.1111/j.1469-8137.2010.03283.x.

Jumpponen, A., and K.L. Jones. 2009. Massively parallel 454 sequencing indicates hyperdiverse fungal communities in temperate Quercus macrocarpa phyllosphere. New Phytologist 184:438–448.

Margulies, M., M. Egholm, W.E. Altman, S. Attiya, J.S. Bader, L.A. Bemben, J. Berka, M.S. Braverman, Y.J. Chen, Z. Chen, and others. 2005. Genome sequencing in open microfabricated high density picoliter reactors. Nature 437:376.

Nei, M., and W. H. Li. 1979. Mathematical model for studying genetic variation in terms of restriction endonucleases. Proceedings of the National Academy of Sciences 76:5269.

Sharma, J. 2002. Mycobionts, germination, and conservation genetics of federally threatened *Platanthera praeclara* (Orchidaceae). Page 145. University of Missouri, Columbia, MO.

Sharma, J. 2005. Federally threatened *Platanthera praeclara*: a model for plant conservation. The Native Orchid Conference Journal 2:11-16.

Sharma, J., L. W. Zettler, and J. W. Van sambeek. 2003a. A survey of mycobionts of federally threatened *Platanthera praeclara* (Orchidaceae). Symbiosis 34:145-155.

Sharma, J., L. W. Zettler, J. W. Van sambeek, M. R. Ellersieck, and C. J. Starbuck. 2003b.

Symbiotic seed germination and mycorrhizae of federally threatened *Platanthera praeclara* (Orchidaceae). American Midland Naturalist 149:104-120.
Sharma, J., M.L. Ishida, and V.L. Yadon. 2007. Mycorrhizal diversity of an endemic terrestrial orchid. Lankesteriana 7:215-218.
Taylor, D.L., and M.K. McCormick. 2008. Internal transcribed spacer primers and sequences for improved characterization of basidiomycetous orchid mycorrhizas. New Phytologist 177:1020-1033.
Taylor, D.L., and S. Houston. 2011. A Bioinformatics Pipeline for Sequence-Based Analyses of Fungal Biodiversity. Pages 141-155-155 Fungal Genomics. Humana Press. Retrieved from http://dx.doi.org/10.1007/978-1-61779-040-9_10.
Ter Braak, C.J.F., and O. Van Tongeren. 1995. Data analysis in community and landscape ecology. Cambridge Univ Press.
USFWS (U.S. Fish and Wildlife Service). 1996. Western prairie fringed orchid recovery plan (*Platanthera praeclara*). U.S. Fish and Wildlife Service, Ft. Snelling, MN. 101 p.
USFWS (U.S. Fish and Wildlife Service). 2009. Western Prairie Fringed Orchid (*Platanthera praeclara*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Bloomington, MN. 39 p.
Zettler, L.W., J. Sharma, and F.N. Rasmussen. 2003. Mycorrrhizal Diversity (Chapter 11). K.W. Dixon, S.P. Kell, R.L. Barrett, and P.J. Cribb (eds). Orchid Conservation, pp. 205-226. Natural History Publications, Kota Kinabalu, Sabah, Malaysia.

Proposal to monitor White-Fringed Prairie Orchid phenology

Investigator: Lori Biederman,
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Iowa State University
lbied@iastate.edu
515-509-6346

Objective: To monitor white-fringed prairie orchid (WFPO) phenology at Dinesen Prairie State Preserve with similar methods employed by the Minnesota Department of Natural Resources at Blue Mounds State Park and Pembina Trail Preserve.

History: In 2012 we found 40 WFPO individuals in 10 distinct bands along the northeast slope in Dinesen Prairie State Preserve (T80 R38 NWNESW28). We established 27 monitoring plots that contain 33 of the WFPO individuals along ten transects with rebar and have x,y coordinates for the orchid individuals (both the 33 in the plots and the 7 outside the plots). See Figure 1.

Methods for on-going monitoring: In early March 2013 we will relocate the 10 transects and search them thoroughly for emerging orchids (as well as the surrounding areas). We will revisit the site every 7 to 10 days the site and thoroughly search the grid. Orchid characteristics, including plant height, number of leaves and reproductive status (number of buds, flowers, etc), will be noted for all individuals. After peak flowering the site will be visited every 2 weeks to monitor the plants through dormancy.

Note that the MNDNR has only recently begun post-peak monitoring as part of their interest in seed production. It may not be within the IA DNR's goals to do this, so I have done the budget in two steps.

Plant webcam methods: One current hypothesis is that both the equinox and solstice may influence the timing of anthesis. We would like to purchase and place a webcam on an

individual that is likely to flower (prediction based on previous years' flowering) in order to provide daily monitoring of the plant. Plant images would be available for IADNR use (see http://www.dnr.state.mn.us/wildflowers/western_prairie_fringed_orchid.html for a movie based on previous images).

Soil moisture: Another hypothesis is that orchid distribution is linked to soil moisture. Small soil samples (2 - 2.5 cm cores to 10 cm depth) will be taken near (within 5 meters, but not within 1 meter) of the plants to measure gravimetric soil moisture and determine soil texture.

Soil biological samples: I am in contact with Phil Delphey and Jyotsna Sharma about Dr. Sharma's sampling of mycorrhizae this summer. This site may be among those she samples (with the appropriate permits). I would assist her in the sampling.

Schedule:

In early March: Initial site visit to locate individuals, establish permanent plots

Late March through early July (peak flowering): Every 7 to 10 days revisit permanent plots.

If the IA DNR would like post-peak monitoring to continue through senescence visits will continue every 12-16 days.

Motion – McNeal to further research Western Prairie Fringed Orchid at the Dinesen Prairie State Preserve.
S**econded** – Alex
Decision – All aye

APPROVED AS MOTIONED

9. RFP FOR FISCAL YEAR 2013

INFORMAL COMPETITIVE SOLICITATION
for
Research and Inventory Proposals for State Preserves
(CRD8810DHOWELLFY14)

Introduction: In accordance with the informal competition procedures provided for in 11 Iowa Administrative Code 106.9, the State Preserves Advisory Board (Board) and the Department of Natural Resources (DNR) are seeking Service Providers to conduct inventory, management, and research projects on state preserves. Proposals will be considered for biological, archaeological, geological, or historical inventories, management activities, and other research for the state preserves program.

We hope to have about $15,000 to fund several projects. Funding is dependent on state appropriations that will be determined during the 2013 Legislative Session. The Board and the DNR will not know if funds are available until early June. The Board will select projects in April or May and will be contingent upon funding availability.

DNR anticipates that the term of any resulting contract will be approximately one year, beginning after July 1, 2013. Service Providers interested in providing these services should submit proposals to the **DNR Issuing Officer** at the following address:

Daryl Howell
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319-0034
Phone: (515) 281-8524
FAX: (515) 281-6794
Email: Daryl.Howell@dnr.iowa.gov

Proposals should be submitted no later than 3:00 p.m. CST on March 20, 2013. Any proposal received after this deadline will be rejected and returned to the Service Provider. The costs of preparation and delivery of the bid proposal are solely the responsibility of the Service Provider.

Description of Work and Scope of Services:
The DNR is seeking qualified service providers to conduct the following for various preserves throughout the state of Iowa. Proposed projects may include inventories of flora and fauna, conducting or coordinating management activities, Phase I archaeological surveys, research of management issues, geomorphic studies, interpretation of preserves, or other innovative ideas. A final report is required for all research and inventory projects. The report shall follow journal format and include the following:

- Abstract
- Introduction
- Methods
- Results
- Discussion (including management implications, if applicable)
- Literature Cited

The sections identified below list potential projects but should not be considered the only projects that will be considered for funding. Applicants may propose to study one or more of the suggested sites. Proposals for other preserves and other topics will also be considered.

ARCHAEOLOGICAL STUDIES

Archaeological studies shall follow the "Guidelines for Archaeological Investigations in Iowa." Preserves that need Phase I archaeological surveys include:

Preserve	**County**
Eureka Woods (90 acres)	Greene
Anderson Prairie (200 acres)*	Emmet
Spirit Knoll (208 acres)* ✦	Plymouth

** Due to the large number of acres in these preserves, proposals that cover a portion of a preserve will be considered.*
✦ *Since the property contains known burial sites, consultation with the OSA Burials Program is required.*

The Board also seeks proposals for the following:

Interpretive materials adaptable to presentation on the IDNR website for State preserves of archaeological significance. Assembled materials would include a descriptive narrative written for the general public summarizing existing knowledge of the Preserve's archaeology within the context of regional archaeology, site plans and stratigraphic drawings (if appropriate), historic photographs illustrating archaeological research conducted at the Preserve, and artifact and feature illustrations (drawings and photos). Wittrock Indian Village, O'Brien County, and Hartley Fort, Allamakee, County, are examples of Preserves that need interpretive materials.

Archaeological testing at Gitchie Manitou State Preserve. Site 13LO402 in Gitchie Manitou State Preserve, is recorded as a mound group containing 17 mounds. The State Preserves Advisory Board seeks verification of whether these features are prehistoric or much more recent in nature. Verification would consist of the use of an Oakfield hand-held push probe to take a series of soil cores from on- and off-mound locations [probe to be a minimum ¾ in (2 cm) diameter to maximum 1 in diameter, capable of reaching a depth of 3 meters]. Soil cores will be placed at the top of each feature, and on ground adjacent to the feature. The small diameter of the core is in accordance with the minimal-disturbance policy of the OSA Burials Program and complies with burial protection laws in the Iowa Code (2368.7-9) and Iowa Administrative Code (685.11). Proposals must demonstrate an understanding of the pedalogic processes and soils associated with known burial mounds elsewhere in Iowa. Other, minimally invasive techniques may be considered, but it is strongly recommended these be discussed with the OSA Burials Program Director before submitting a proposal to the State Preserves Advisory Board.

The OSA Burials Program has agreed to the authentication of the mounds and consultation with the OSA Burials Program is required prior to beginning fieldwork. A report of results must include the OSA Burials Program in addition to the State Preserves Advisory Board.

MANAGEMENT ACTIVITIES

Biological Preserves
Assist preserve managers by conducting or coordinating brush control, prescribed burns, and invasive species control projects on small, isolated sites where applicant can make a significant contribution. Projects that provide long-term solutions to management problems will be given priority.

Geological Preserves

Research projects that focus on management concerns and guidelines may deal with the geologic or hydrologic aspects of a preserve. Such investigations could include erosional or sedimentation patterns that are altering a preserve, or hydrologic processes that are essential to sustaining a preserve's integrity, including the extent of groundwater recharge areas and vulnerability to groundwater contamination. These would apply particularly to the fen, spring, algific slope, cave, and ice cave preserves.

BIOLOGICAL STUDIES

Biological Preserves are in need of conservation assessments to document and protect the faunal and/or floral composition of the preserve. Principally, the conservation assessment consists of a comprehensive species inventory, with maps indicating major vegetation/faunal communities, and the particular spatial distribution of species of conservation concern. Rare or endangered species, species that are found outside of their known range, and species of particular cultural value (for example large, open-grown oak trees) may be singled out for spatial data.

Conservation assessments are encouraged to include observations on population change over time, potential threats due to invasive species, successional changes, changes to faunal habitat, etc.

We encourage the use of GPS/GIS technology to document findings.

Preserves that need fauna surveys include:

Preserve	**County**	**Survey**	**Habitat**
Catfish Creek (600 acres)	Dubuque	Birds	Forest
Fallen Rock (122 acres)	Hardin	Birds and/or Bats	Forest
Mann Wilderness (103 acres)	Hardin	Birds and/or Bats	Forest
Spirit Knoll (168 acres)	Plymouth	Butterflies & Moths	Grassland/Prairie
Rolling Thunder (123 acres)	Warren	Butterflies	Prairie

Preserves that need surveys of flora include:

Preserve	**County**	**Predominant vegetation**
Cold Water Spring (60 acres)*	Winneshiek	Forest
Vincent Bluff (31 acres)	Pottawattamie	Prairie and forest
Fossil and Prairie Park (292 acres)	Floyd	Prairie, forest, wetland
Ocheyedan Mound (24 acres)	Osceola	Prairie
Pellett Woods (20 acres)	Cass	Forest
Steele Prairie (200 acres)	Cherokee	Prairie, wetland
Spirit Knoll (208 acres)	Plymouth	Prairie, grassland

Note: *Surveys for preserves flagged with an asterisk (*) could be proposed to include adjacent public areas.*

Preserves in need of re-survey of flora include:

Preserve	**County**	**Predominant vegetation**
Williams Prairie (30 acres)	Johnson	Prairie

Stinson Prairie (32 acres)	Kossuth	Prairie
Nestor Stiles Prairie (10 acres)	Cherokee	Prairie
Liska-Stanek Prairie (20 acres)	Webster	Prairie
Marietta Sand Prairie (17 acres)*	Marshall	Prairie, forest, wetland
Cayler Prairie (160 acres)*	Dickinson	Prairie
Hayden (240 acres)	Howard	Prairie

Note: *Surveys for preserves flagged with an asterisk (*) could be proposed to include adjacent public areas.*

Two additional categories of preserves in need of study are 1) preserves needing resurvey of previously established permanent vegetation measurement plots and 2) preserves whose previously documented floristic surveys lack adequate inventory of difficult or overlooked plant groups such as sedges, bryophytes, and lichens.

GEOLOGICAL STUDIES

The Board is also seeking proposals that will directly benefit one or more State Preserves designated wholly or in part as "geological." The greatest need is for information that completes a thorough geologic inventory of a preserve, contributes to its interpretation or related materials, or improves its management guidelines. While basic geology of many preserves is understood in a general sense, specifics are lacking in many cases, and interpretive material for the public is lacking for most sites.

An inventory would include a basic field investigation and prepared summary of the geologic content of the preserve. This would require compiling all existing geologic data as well as the acquisition of new data required to achieve a level of understanding that explains both the principal geologic setting of the preserve and its notable features. The assembled document might include a cross-section, stratigraphic column, geologic and topographic maps, fossil illustrations, photographs, and a discussion of the regional geologic history. The report should be written so as to be adaptable to presentation on the WWW, to publications such as the State Preserves Guide, to interpretive material prepared under the Board's direction, and to use by the preserve managers. Behrens Ponds and Woodland and Cedar Bluffs are examples of preserves that need geological studies.

Inventories of potential geological preserves are also potential projects. An inventory of glacial erratic fields is an example of work that needs to be completed.

Proposals will also be considered for the preparation of interpretive materials that will benefit public understanding of preserves with a geological designation, especially those that are frequently visited or associated with a permanent, staffed facility. Starr’s Cave, Catfish Creek, Pilot Knob, and Brushy Creek are examples.

Proposed Project Schedule: Contracts will start after July 1, 2013 and will expire on June 30, 2014. All fieldwork must be completed and all reports submitted by the contract expiration date.

Submission of Proposals: Twelve copies of each proposal must be delivered to the office of the above listed DNR Issuing Officer at the location on the first page of this document by 3:00 p.m., March 20, 2013. It is anticipated that winning proposals will be selected in April or May.

Proposals should include 1) a technical proposal containing a description of the objectives and methods of the proposed study, including how the proposed project will benefit the Preserves System, 2) a resume of the qualifications of project personnel, and 3) a cost proposal indicating labor costs (number of hours times hourly rate for various personnel), materials to be purchased for the research, and travel expenses (lodging, mileage, and meals).

From the date of issuance of this Informal Competitive Solicitation until announcement of the successful Service Provider, **Service Providers may not contact any employee of the State of Iowa about this RFP other than the DNR Issuing Officer named above**. Service Providers may submit written questions relating to the interpretation of this Informal Competitive Solicitation and the procurement process to the DNR Issuing Officer at the above address. Written responses to any questions received will be provided to all potential Service Providers. If a Service Provider or someone acting on a Service Provider's behalf attempts to discuss this RFP orally or in writing with any members of the DNR evaluation committee, or any employee of the State of Iowa other than the above-named DNR Issuing Officer, then the Service Provider may be disqualified.

Acceptance of Attached Contract Terms and Conditions

By submitting a proposal, each Service Provider acknowledges its acceptance of the terms and conditions of the contract template "Special Conditions" and "General Conditions" found in Attachment 1. If a Service Provider takes exception to a contract provision, then the Service Provider must state specific exception and the reason for the exception, and must set forth in its proposal the specific contract language it proposes to include as an alternative to the provision. Contract provision exceptions that materially change the terms or the requirements of this informal bidding process may be deemed non-responsive by the DNR, as determined in its sole discretion, resulting in possible disqualification of the Service Provider's proposal. With regard to the "Special Conditions," DNR and the successful Service Provider may agree to modifications to the terms of the "Special Conditions" as necessary to negotiate the terms of a contract. A Service Provider's failure to state an exception to any contract provision and propose alternative language may be deemed by the DNR to constitute the Service Provider's acceptance thereof. The State reserves the right to refuse to enter into a contract with the successful Service Provider for any reason, even after delivery of notice of selection or intent to award a contract.

Evaluation Criteria: The Board will consider all information provided in the proposal when making its selections and may consider relevant information from other sources.

Proposals will be evaluated and a recommendation will be made using the following criteria, listed in no particular order (total of 30 points):

1. (10 points) Benefit of proposed project to state preserve system. Higher scores will be assigned to proposals which provide information pertinent to the management of individual preserves, contribute to solving management problems that affect several preserves, aid in identifying potential preserves, yield information which can be used to improve the protection and management of preserves, or improve management of one or more preserves.
2. (10 points) Feasibility of proposed project. Are the goals and objectives of the proposed project clearly stated and achievable? Is the requested funding commensurate with the effort required? Are the personnel qualified to perform the study?
3. (10 points) Soundness of methodology. Are the methods suited to the goals and objectives? Will the proposed project have unacceptable impacts to the study sites? Are the number, size, and distribution of samples or observations sufficient? Are the analytical methods appropriate? Are the management techniques appropriate?

Based on the above scoring criteria and numerical scores, the board members will rank proposals as high (1), medium (2), or low (3) priority for funding. The ranking numbers for each proposal will be totaled and divided by the number of scorers. Proposals with the lowest numbers will be funded until the available funds are expended.

Miscellaneous Information: DNR reserves the right to reject any or all proposals, in whole or in part, to advertise for new proposals, to abandon the need for such services, and to cancel this Informal Competitive Solicitation at any time prior to the execution of a written contract.

All information submitted by a Service Provider may be treated as a public record by the DNR unless the Service Provider properly requests that the information be treated as confidential information in accordance with the public records laws of the State of Iowa at the time its proposal is submitted.

The costs of preparation and delivery of the bid proposal are solely the responsibility of the Service Provider.

By submitting a proposal, the Service Provider agrees that DNR may copy the proposal for purposes of facilitating the evaluation of the proposal or to respond to requests for public records and represents that such copying will not violate the rights of any third party.

By submitting a proposal, the Service Provider agrees that it will not bring any claim or have any cause of action against DNR or the State of Iowa based on any misunderstanding concerning the information provided herein or concerning the DNR or

the State of Iowa's failure, negligent or otherwise, to provide the bidder with pertinent information as intended by this Informal Competitive Solicitation.

Notice of intent to award the contract will be sent by mail or email to all Service Providers submitting a timely proposal. If the apparent successful Service Provider fails to negotiate and deliver an executed contract within a reasonable period of time following selection, then DNR may, in its sole discretion, cancel the award and award the contract to the next highest ranked Service Provider.

CONTRACT Contract Number

Between

IOWA DEPARTMENT OF NATURAL RESOURCES
AND
Contractor Name

The parties agree as follows:

Section 1 IDENTITY OF THE PARTIES

1.1 The Iowa Department of Natural Resources (DNR) is authorized to enter into this Contract. The DNR's address is: 502 East Ninth Street, Des Moines, IA 50319. The Principal Contact for the DNR is:

DNR Project Manager Name, Title
Bureau, Division
Street Address, City, IA, Zip
Phone: Project Manager Phone
Fax: Project Manager Fax
Email: Project Manager Email

1.2 Contractor Name (Contractor) is type of organization authorized to do business in the state of Iowa. The Contractor's address is: Contractor Street Address; Contractor City, Contractor State Contractor Zip. The Principal Contact for the Contractor is:

Contractor Project Manager Name, Contractor Project Manager Title
Contractor Project Manager Street Address
Contractor Project Manager City, Contractor Project Manager State Zip
Phone: Contractor Project Manager Phone
Fax: Contractor Project Manager Fax
Email: Contractor Project Manager Email

Section 2 PURPOSE

The parties have entered into this Contract to Purpose TE.

Section 3 DURATION OF CONTRACT

The term of this Contract shall be upon execution until Contract Expiration Date, unless terminated earlier in accordance with the Termination section of this Contract.

Section 4 SCOPE OF SERVICES

4.1 Scope of Services. The Contractor shall provide the services in accordance with the defined performance criteria and obligations as set forth below:

4.1.1 Task 1: Task Name
Description: Description

4.1.2.Task 2: Task Name
Description: Description

ETC.

4.2 Performance Measures. The Contractor shall meet the following performance measures:

Obligation	Interval/Date of Completion
Task 1: Task Name	Task Due Date
Task 2: Task Name	Task Due Date
ETC.	ETC.

4.3 Monitoring Clause. In compliance with the State of Iowa Accountable Government Act, the DNR will monitor the performance of the Contractor monthly by logging any complaints regarding Contractor's performance and meeting with Contractor to address those complaints to make sure that Contractor is meeting the deliverables of the Contract and achieving the specified results. The Contractor will be required throughout the duration of the contract to satisfactorily provide timely maintenance services in order to meet the desired outcomes.

4.4 Review Clause. The DNR will review all work performed by the Contractor under this Contract and recommend payment for that work, or portion of the work, that conforms with this Contract. The DNR shall have the right to review and observe, at any time, completed work or work in progress. Contractor shall allow the State of Iowa or the DNR, to, without cost, inspect its facilities and books and records relating to invoicing and time records for the purpose of monitoring and evaluating performance of this Contract.

Section 5 COMPENSATION

5.1 Pricing. The Contractor will be paid for the services described in the Section 4.1 of this Contract in an amount not to exceed Contract Amount. Payment shall include reimbursement for necessary airfare, lodging, meals and other necessary travel costs, in accordance with state travel policies, directly related to providing the services described in Section 4.1 of this Contract. The most recent version of the state's travel policies are available at: http://das.sae.iowa.gov/internal_services/210_travel.html.

5.2 Billings. The Contractor shall submit an invoice for services rendered in accordance with this Contract Invoice interval (e.g., not more than quartlery, not more than monthly, upon completion of the work). The invoice shall comply with all applicable rules concerning payment of such claims. The DNR shall pay all approved invoices in arrears and in conformance with Iowa Code section 8A.514 (2007.) The DNR may pay in less than sixty (60) days, as provided in Iowa Code section 8A.514 (2007). However, an election to pay in less than sixty (60) days shall not act as an implied waiver of Iowa Code section 8A.514(2007).

5.3 Set-Off Against Sums Owed by the Contractor. In the event that the Contractor owes the State any sum under the terms of this Contract, any other Contract, pursuant to any judgment, the State may set off the sum owed to the State against any sum owed by the State to the Contractor in the State's sole discretion, unless otherwise required by law. The Contractor agrees that this provision constitutes proper and timely notice under the law of setoff.

5.4 Delay of Payment Due to Contractor's Failure. If the DNR determines that the Contractor has failed to perform or deliver any service or product required by this Contract, then the Contractor shall not be entitled to any compensation, or any further compensation if compensation has already occurred, under this Contract until such service or product is performed or delivered. The DNR shall withhold that portion of the invoice amount which represents payment for the task or deliverable that was not completed, delivered and successfully deployed.

5.5 Erroneous Payments and Credits. Contractor shall promptly re-pay or refund to the DNR the full amount of any overpayment or erroneous payment within ten (10) business days after either discovery by Contractor or notification by the DNR of the overpayment or erroneous payment.

5.6 Set-off Against Sums Owed by Contractor. In the event that Contractor owes the DNR or the State of Iowa any sum (including any State taxes in arrears) under the terms of this Contract, any other

Contract, pursuant to a judgment, or pursuant to any law, DNR may set off such sum against any sum invoiced to the DNR by Contractor. This may be done in the DNR's sole discretion unless otherwise required by law.

Section 6 TERMINATION

6.1 Immediate Termination by the DNR. The DNR may terminate this Contract immediately for any of the following reasons effective immediately without advance notice: in the event the Contractor is required to be certified or licensed as a condition precedent to providing services, the revocation or loss of such license or certification will result in immediate termination of the Contract effective as of the date on which the license or certification is no longer in effect; the DNR determines that the actions, or failure to act, of the Contractor, its agents, employees or subcontractors have caused, or reasonably could cause, a client's life, health or safety to be jeopardized; the Contractor fails to comply with confidentiality laws or provisions; or the Contractor furnished any statement, representation or certification in connection with this Contract or the RFP which is materially false, deceptive, incorrect or incomplete.

6.2 Termination for Cause. The DNR may terminate the Contract for cause if the Contractor breaches the Contract; becomes the subject of any bankruptcy or insolvency proceeding; has failed to comply with applicable state or federal laws, rules, ordinances, regulations or orders; or has otherwise engaged in conduct that has or may expose the State or the DNR to liability, as determined in the DNR's sole discretion. If there is a default event caused by the Contractor, the DNR shall provide written notice to the Contractor requesting that the breach or noncompliance be remedied within the period of time specified in the DNR's written notice to the Contractor. If the breach or noncompliance is not remedied by the date of the written notice, the DNR may immediately terminate the Contract without additional written notice. Following 30 days' written notice, the DNR may terminate this Contract in whole or in part without the payment of any penalty or incurring any further obligation to the Contractor. Following termination upon notice, the Contractor shall be entitled to compensation, upon submission of invoices and proper proof of claim, for services provided under this Contract to the DNR up to and including the date of termination.

6.3 Termination Due to Lack of Funds or Change in Law. The DNR shall have the right to terminate this Contract without penalty by giving sixty (60) days' written notice to the Contractor if, in the DNR's sole discretion, adequate funds are not appropriated or granted to allow the DNR to operate as required and to fulfill its obligations under this Contract or funds are de-appropriated; if funds are de-appropriated, reduced, not allocated, or receipt of funds is delayed, or if any funds or revenues needed by DNR to make any payment hereunder are insufficient or unavailable for any other reason as determined by DNR in its sole discretion; if the DNR's authorization to conduct its business or engage in activities or operations related to the subject matter of this Contract is withdrawn or materially altered or modified; if the DNR's duties, programs or responsibilities are modified or materially altered; or if there is a decision of any court, administrative law judge or an arbitration panel or any law, rule, regulation or order is enacted, promulgated or issued that materially or adversely affects the DNR's ability to fulfill any of its obligations under this Contract.

6.4 The Contractor's Termination Duties. The Contractor upon receipt of notice of termination or upon request of the DNR, shall cease work under this Contract and take all necessary or appropriate steps to limit disbursements and minimize costs, and furnish a report within thirty (30) days of the date of notice of termination, describing the status of all work under the Contract, including, without limitation, results accomplished, and conclusions resulting there from, any other matters the DNR may require; shall immediately cease using and return to the DNR any personal property or materials, whether tangible or intangible, provided by the DNR to the Contractor; and shall comply with the DNR's instructions for the timely transfer of any active files and work product produced by the Contractor under this Contract.

Section 7 REPRESENTATIONS AND WARRANTIES

7.1 Property, Concepts, Materials, and Works Produced. The Contractor represents and warrants that title to any property assigned, conveyed or licensed to the DNR is good and that transfer of title or license to the DNR is rightful and that all property shall be delivered free of any security interest or other lien or encumbrance. The Contractor represents and warrants that all the concepts, materials and Works produced, or provided to the DNR pursuant to the terms of this Contract shall be wholly original with the Contractor or that the Contractor has secured all applicable interests, rights, licenses, permits or other intellectual property rights in such concepts, materials and Works.

7.2 Professional Practices. The Contractor represents and warrants that all of the services to be performed hereunder will be rendered using sound, professional practices and in a competent and professional manner by knowledgeable, trained and qualified personnel.

7.3 Authority to Enter into Contract. The Contractor represents and warrants that it has full authority to enter into this Contract and that it has not granted and will not grant any right or interest to any person or entity that might derogate, encumber or interfere with the rights granted to the DNR.

Section 8 DATA AND WORK PRODUCTS

8.1 Rights in Data. The DNR shall be and shall remain the owner of all data and records provided to the Contractor. The Contractor will not use the DNR's data and records for any purpose other than providing services under the contract, nor will any part of the data and records be disclosed, sold, assigned, leased, or otherwise disposed to third parties or commercially exploited by or on behalf of the Contractor.

8.2 Ownership of Work Product. The DNR shall own all work products and deliverables developed or furnished in connection with the Contract by the Contractor or any subcontractor to the extent that any work products or deliverables are generated as a result of this Contract. The Contractor shall require that all agreements with subcontractors provide for the irrevocable assignment of rights to the DNR, without additional consideration of all work products and deliverables of the subcontractors.

Section 9 INDEMNIFICATION

The Contractor agrees to indemnify and hold harmless the State of Iowa and the DNR, its officers, employees and agents appointed and elected and volunteers from any and all costs, expenses, losses, claims, damages, liabilities, settlements and judgments, including reasonable value of the time spent by the Attorney General's Office, and the costs and expenses and reasonable attorneys' fees of other counsel required to defend the State of Iowa or the DNR, related to or arising from its acts. Indemnification obligation of the Contractor shall survive termination of this Contract.

Section 10 LIMITATION OF LIABILITY

The Contractor expressly acknowledges that the services procured by this Contract are subject to legislative change by either the federal or state government. Should either legislative body enact measures which alter the services to be provided by this Contract, the Contractor shall not hold the DNR liable in any manner for the resulting changes. The DNR shall use best efforts to provide thirty (30) days' written notice to the Contractor of any legislative change. During the thirty (30)-day period, the parties shall meet and make a good faith effort to agree upon changes to the Contract to address the legislative change. Nothing in this Subsection shall affect or impair the DNR's right to terminate the Contract pursuant to the termination provisions.

Section 11 ADDITIONAL PROVISIONS

11.1 Independent Contractor. The status of the Contractor shall be that of an independent contractor. Nothing in this Contract shall be construed as creating or constituting the relationship of a partnership, joint venture, (or other association of any kind or agent and principal relationship) between the parties hereto. The Contractor, its employees, agents and any subcontractors performing under this Contract are not employees or agents of the State of Iowa or any agency, division or department of the state. Neither the Contractor nor its employees shall be considered employees of the DNR or the State of Iowa for federal or state tax purposes. The DNR will not withhold taxes on behalf of the Contractor (unless required by law).

11.2 Compliance with the Law. The Contractor, its employees, agents, and subcontractors shall comply with all applicable federal, state, and local laws, rules, ordinances, regulations and orders when performing the services under this Contract, including without limitation, all laws applicable to the prevention of discrimination in employment and the use of targeted small businesses as subcontractors or suppliers. The Contractor may be required to submit its affirmative action plan to the DNR of Management to comply with the requirements of 541 IAC, Sec 4.

11.3 Conflict of Interest. The Contractor covenants that the Contractor presently has no interest and shall not acquire any interest, direct and indirect, which would conflict in any manner or degree with the performance of services required under this Contract. The Contractor further covenants that in the performance of this Contract no person having any such interest shall be employed. In addition, during the term of this Contract, Contractor shall not provide services that would create a conflict of interest with the Contractor's duties set out in this Contract.

11.4 Amendments. This Contract may be amended in writing from time to time by mutual consent of the parties. All amendments to this Contract must be in writing and fully executed by the parties.

11.5 Choice of Law and Forum. The laws of the State of Iowa shall govern and determine all matters arising out of or in connection with this Contract without regard to the choice of law provisions of Iowa law. In the event any proceeding of a quasi-judicial or judicial nature is commended in connection with this Contract, the exclusive jurisdiction for the proceeding shall be brought in Polk County District Court for the State of Iowa, Des Moines, Iowa, or in the United States District Court for the Southern District of Iowa, Central Division, Des Moines, Iowa wherever jurisdiction is appropriate.

11.6 Assignment and Delegation. This Contract may not be assigned, transferred, conveyed, or delegated in whole or in part without the prior written consent of the other party.

11.7 Supersedes Former Contracts or Agreements. This Contract supersedes all prior Contracts or Agreements between the DNR and the Contractor for the services provided in connection with this Contract.

11.8 Waiver. Except as specifically provided for in a waiver signed by duly authorized representatives of the DNR and the Contractor, failure by either party at any time to require performance by the other party or to claim a breach of any provision of the Contract shall not be construed as affecting any subsequent right to require performance or to claim a breach.

11.9 Notice. Any and all notices, designations, consents, offers, acceptances or any other communication provided for herein shall be given in writing by registered or certified mail, return receipt requested; by receipted hand delivery; or by Federal Express, courier or other similar and reliable carrier, and shall be addressed to each party as set forth as in Section 1 of this Contract. From time to time, the parties may change the name and address of a party designated to receive notice. Such change of the designated person shall be in writing to the other party and as provided herein.

11.10 Severability. If any provision of this Contract is determined by a court of competent jurisdiction to be invalid or unenforceable, such determination shall not affect the validity or enforceability of any other part or provision of this Contract.

11.11 Public Records. The Contractor shall comply with the requirements of Iowa Code Chapter 22 (2007), including Iowa Code Section 22.7 (2007), which defines confidential records and prescribes confidential handling procedures and shall maintain all documents related to this Contract sufficiently and properly throughout the term of this Contract and for a period of at least five years following receipt of Contractor's final payment, whichever occurs last, and shall allow the DNR and any other representative of the state or federal government to access and examine, audit, excerpt and transcribe any directly pertinent documents at no cost to the state or federal government.

11.12 Obligations beyond Contract Term. This Contract shall remain in full force and effect to the end of the specified term or until terminated or canceled pursuant to this Contract. All obligations of the DNR and the Contractor incurred or existing under this Contract as of the date of expiration, termination or cancellation will survive the termination, expiration or conclusion of this Contract.

11.13 Additional Provisions. The parties agree that if an Addendum, Rider or Exhibit is attached hereto by the parties, and referred to herein, then the same shall be deemed incorporated herein by reference.

11.14 Delay or Impossibility of Performance. The Contractor shall not be in default under this Contract if performance is delayed or made impossible by an act of God, flood, fire or similar events. In each such case, the delay or impossibility must be beyond the control and without the fault or negligence of the Contractor. If delay results from a subcontractor's conduct, negligence or failure to perform, the Contractor shall not be excused from compliance with the terms and obligations of this Contract.

11.15 Non-Exclusive Rights. This Contract is not exclusive. The DNR reserves the right to select other contractors to provide services similar or identical to the Scope of Services described in this Contract during the term of this Contract.

11.16 Immunity from Liability. Every person who is a party to the Contract is hereby notified and agrees that the State, the Agency and all of their employees, agents, successors, and assigns are immune from liability and suit for of from Contractor's and/or subcontractors' activities involving third parties arising from the Contract.

11.17 Non-Supplanting Requirement. To the extent required by state or federal law, federal and state funds made available under this Contract shall be used to supplement and increase the level of state, local and other non-federal funds that would in the absence of such federal and state funds be made available for the programs and activities for which funds are provided and will in no event take the place of state, local and other non-federal funds.

REMOVE THIS SECTION AND ATTACHMENT A IF NO FEDERAL FUNDS ARE USED.

11.18 Federal Funds. The Contractor has read and understands the provisions of Attachment A, Additional Requirements for Federally-Funded Agreements, attached hereto and made part of this Contract by this reference, and the Contractor agrees to conform to the requirements contained therein.

Section 12 EXECUTION

In consideration of the mutual covenants set forth above and for other goods and valuable consideration, the receipt, adequacy and legal sufficiency of which are hereby acknowledged, the parties have entered into the above Contract, which represents the entire Contract between the parties, and have caused their duly authorized representatives to execute this Contract.

This document is a template and does not constitute a binding offer on the part of the state of Iowa nor the Iowa Department of Natural Resources. Information in "blue" or "gray" is information that is subject to completion after contracts are awarded and successful service providers are announced.

DEPARTMENT OF NATURAL RESOURCES:

By: _____ Date: _____
Signatory, Title (refer to Signature Policy)

Contractor Name:

By: _____ Date: _____
Contractor Signatory, Title

Federal Tax Identification Number: Contractor Tax ID

Attachment A
Additional Requirements for Federally-funded Agreements

A.1 Suspension and Debarment. The Contractor certifies pursuant to 31 CFR Part 19 that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this Contract by any federal department or agency.

A.2 Lobbying Restrictions. The Contractor shall comply with all certification and disclosure requirements prescribed by 31 U.S.C. Section 1352 and any implementing regulations and shall be responsible for ensuring that any subcontractor fully complies with all certification and disclosure requirements.

A.3 Pro-Children Act of 1994. Public Law 103-227, also known as the Pro-Children Act of 1994 (Act), requires that smoking not be permitted in any portion of any indoor facility owned or leased or contracted for by an entity and used routinely or regularly for the provision of health, day care, early childhood development services, education or library services to children under the age of 18, if the services are funded by federal programs either directly or through state or local governments, by federal grant, contract, loan or loan guarantee. Federal programs include grants, cooperative agreements, loans or loan guarantees and contracts. The law also applies to children's services that are provided in indoor facilities that are constructed, operated or maintained with such federal funds. The law does not apply to children's services provided in private residences; portions of facilities used for inpatient drug or alcohol treatment; service providers whose sole source of applicable federal funds is Medicare or Medicaid; or facilities (other than clinics) where WIC coupons are redeemed. Failure to comply with the provisions of the law may result in the imposition of a civil monetary penalty of up to $1,000 for each violation and/or the imposition of an administrative compliance order on the responsible party. The Contractor certifies that it will comply with the requirements of the Pro-Children Act of 1994 and will not allow smoking within any portion of any indoor facility used for the provision of services for children as defined by the Act.

A.4 Certified Audits. Local governments and non-profit subrecipient entities that expend $500,000 or more in a year in federal awards (from all sources) shall have a single audit conducted for that year in accordance with the provisions of OMB Circular A-133 "Audit of States, Local Governments, and Non-Profit Organizations." A copy of the final audit report shall be submitted to the DNR if either the schedule of findings and questioned costs or the summary schedule of prior audit findings includes any audit findings related to federal awards provided by the DNR. If an audit report is not required to be submitted per the criteria above, the subrecipient must provide written notification to the DNR that the audit was conducted in accordance with Government Auditing Standards and that neither the schedule of findings and questioned costs nor the summary schedule of prior audit findings includes any audit findings related to federal awards provided by the DNR. See A-133 Section 21 for a discussion of subrecipient versus vendor relationships.

A.5 Drug Free Work Place. The Contractor shall provide a drug free workplace in accordance with the Drug Free Workplace Act of 1988 and all applicable regulations.

Motion – Alex to contact OSA to be a contact in RFP a listing of the archeological study.
S**econded** – McNeal
Discussion – Prioritize Preserves alphabetical.
Decision – All Aye

10. GENERAL DISCUSSION

None

NEXT MEETING:

April 23, Tuesday – Glenwood Archeological Preserve, Mills Co. Interpretive Center
July 23, Tuesday, Wallace 4W, Des Moines

Lamb re-entered meeting

ADJOURNMENT

Motion was made by Lamb to adjourn the meeting. Approved by Unanimous Vote. With no further business to come before the Iowa State Preserves Advisory Board, Chairperson Wayne Phipps adjourned the meeting on January 11, 2013 at 1:17 pm

APPROVED – MEETING ADJOURNED

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